



**metkon**  
Technology behind Specimen



**METALLOGRAPHY**

# **SAMPLE PREPARATION**

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QUARTER CENTURY OF  
EXPERIENCE



**metkon**  
Technology behind Specimen



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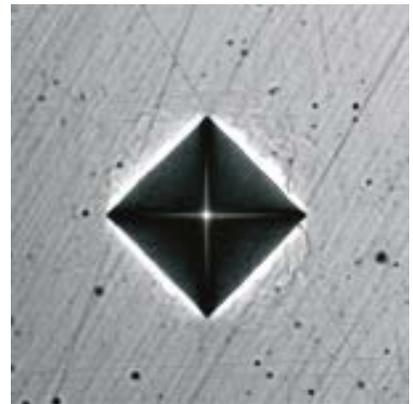
# ABOUT METKON





# METALLOGRAPHY

## About Metkon



Metallography is the science of revealing and evaluating the internal structures of materials. It is one of the most important methods of materials research today, indispensable to the scientist as well as to the engineer.

More recently, advanced materials such as high tech metal alloys, ceramics, composites and polymers have appeared which made metallography become an increasingly vital part of modern industry. Through a process of cutting, mounting, grinding and polishing, a smooth surface is obtained to reach the materials true structure. In order to achieve high preparation quality and reproducible results; a combination of "Right equipment, Correct preparation method and Right consumables" which we call "Total Preparation Solution" is required.

METKON brings total preparation solutions in metallography. We cover the complete range of instruments and consumables for Metallographic Sample Preparation, from manual machines to sophisticated microprocessor controlled preparation systems.

Our systems are used in research laboratories and on production lines, in quality control and in education, in large government installations, automotive companies and small independent laboratories. Materials scientists, designers, engineers and QC managers use METKON products to evaluate the mechanical properties of materials, components and structures.



**CUSTOMERS**

## About Metkon



Since 1993, METKON as a young and dynamic company, had delivered more than 20,000 instruments globally. Our customer list covers the spectrum from small to large international companies and laboratories in many different industries, including: Automotive, Aerospace, Bearing industry, Electronics, Universities and other industries.

Together with our distributors in more than 30 countries, dedicated aftersales support includes trained service and support personnel, application laboratories, customer training courses, and mobile laboratories featuring a hands-on experience with METKON products and specialists.

METKON is proud to be a partner in providing quality products to a variety of customers including; Agusta, Bosch, Eaton, Faurecia, Fiat, GKN, Hyundai, Honda, INA, Lufthansa, Mercedes Benz, Motorola, Pirelli Schneider, Seagate, SKF, Sony, Toyota, TRW, Yamaha and others.

Our primary goal and the greatest motivation for us is to have you as a satisfied METKON customer.



# PRODUCTION



Founded in 1993 as a 3-man-enterprise, METKON today employs over 120 people. Customers around the world have trusted METKON to deliver technologically advanced solutions. Our state-of-the-art Engineering and Product Development center includes teams of engineers working together to create and test ideas that will be incorporated into instruments designed to meet customer needs.

At our in-house manufacturing facility, quality drives production. From sheet metal parts to complex mechanical assemblies, METKON produces most of the components needed in our products, allowing strict control over the entire manufacturing process in accordance with the quality standards of ISO-9001. As a final check before shipping, instruments are thoroughly tested to assure quality and functionality.





# QUALITY POLICY



Being an ISO 9001-2000 certified firm, our Quality Policy is that all products and services meet the requirements of our customers.

Our objective is to justify your trust in our firm by providing quality products and services that are comprehensive and available to you when and wherever you need it.

**METKON's Quality Policy is based on three fundamental principles:**

- Quality is defined as conformance to requirements.
- Total Quality Management is our business philosophy.
- The benchmark for quality comprises our performance goals which are continuously measured.





# EQUIPMENT



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REVERSE

## SPECTRAL Series

## Sample Preparation for Spectroscopy

**SPECTRAL 250**



SPECTRAL 250 is a table-top portable surface grinder for the preparation of steel samples for spectroscopy. Its compact design with vibration free operation makes it a practical instrument to work with. Low noise and dust generation levels as well as standard outlet for dust exhauster are additional advantages.

**SPECTRAL 350**



SPECTRAL 350 Grinders is used to achieve excellent precision flat surfaces of iron and steel samples for spectroscopic analysis. The robust and vibration-free construction has been designed for continuous operation at high sample throughput.

**SPECTRAL 350** Series of instruments are available as Single Disc and Dual Disc Units with 350 mm wheel size which is dynamically balanced for smooth running. Due to its special design, grinding paper is sucked to the grinding disc which does not require any glue.

**SPECTRAL 350-1** Single Disc Grinder with 2800 rpm fixed speed is the most basic unit of Spectral 350 series.

**SPECTRAL 350-2** Dual Disc Grinder has two discs with fixed speed of 2800 rpm.

**SPECTRAL 350-2S** has two grinding discs with dual speed as 1400 and 2800 rpm. It's the most unique grinder, especially for foundries or steel plants having variety of materials.

**SPECTRAL PG 52**



SPECTRAL PG is a compact bench-top pendulum grinder for fast grinding of iron and steel samples for spectroscopic analysis. It has a simple and reliable design with low noise and dust generation levels. It is completely enclosed and dustproof with LED light.

SPECTRAL PG is suitable for wet and dry grinding with minimum maintenance required which is mainly cleaning. It is possible to attach an external dust exhauster to the standard outlet at the rear side. The grinding arm is placed just in front of the machine making it ergonomic and easy to handle.

SPECTRAL PG is especially suitable to grind hard materials like white cast irons.

**SPECTRAL AG 102**



SPECTRAL AG is an automatic cup grinder for spectroscopic sample preparation of iron and steel samples.

Heavy duty cast aluminum base with motorized vertical drive provides accurate control. High-torque grinding motor rotating at 2800 rpm guarantees high material removal rate. SPECTRAL AG is equipped with automatic sample feed with fine speed control. Fast advance and reverse are available. Automatic cup wheel positioning is done with a laser measurement station. This ensures extremely precise positioning with shorter times. All important parameters of the grinding process like feedrate and grinding depth are preset with digital display.

**SPECTRAL MM 102**



SPECTRAL MM is an automatic milling machine for fast milling of non-ferrous samples for OES and X-ray spectrometer analysis. Automatic fine surface milling guarantees the highest level of reproducibility through automatic processing of the specimen. SPECTRAL MM has a robust and reliable design with low noise and emission levels. It is completely enclosed and sound-insulated with LED-light. The front cover can be completely opened for easy access to all sides. SPECTRAL MM is equipped with automatic sample feed with fine speed control. All important parameters of the milling process like feedrate, milling depth, spindle speed are programmable with HMI touch screen controls.

**SPECTRAL MMαx**



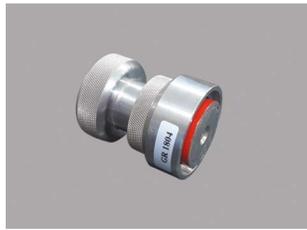
SPECTRAL MMαx is a fully automatic milling machine for fast milling of steel, cast iron and non-ferrous samples for optic emission and X-ray spectrometer analysis. Automatic fine surface milling guarantees the highest level of reproducibility through automatic processing of the specimen.

SPECTRAL MMαx has a robust and reliable design with low noise and emission levels. It is completely enclosed and sound-insulated with LED spot-light. The front cover can be completely opened for easy access to all sides.

# ACCESSORIES

## Sample Preparation for Spectroscopy

Sample Holder for round specimens, Magnetic type.



GR 1804 for SPECTRAL 250  
SPECTRAL 350-1  
SPECTRAL 350-2  
SPECTRAL 350-2S

Sample Holder for round specimens, Mechanical type.



GR 1805 for SPECTRAL 250  
SPECTRAL 350-1  
SPECTRAL 350-2  
SPECTRAL 350-2S

Mechanical clamping device for samples upto 60 mm.



GR 1801 for SPECTRAL MM 102  
SPECTRAL PG 52

Permanent Magnetic Clamping Device, 100x150 mm.



GR 1942 for SPECTRAL PG 52

Electromagnetic clamping device



GR 1929 for SPECTRAL PG 52  
SPECTRAL AG 102

Pneumatic Clamping Device with 3-Jaws



GR 1819 for SPECTRAL AG 102

Milling Head



GR 1835 63 mm for SPECTRAL MM 102  
GR 1836 80 mm for SPECTRAL MM 102  
GR 1823 for ferrous, 80 mm. SPC MMax  
GR 1824 for ferrous, 100 mm. SPC MMax  
GR 1834 for nonferrous, 100 mm. SPC MMax  
GR 1825 With integrated deburring, SPC Mmax

Manual measuring tool for cutter positioning



GR 1810 for SPECTRAL MM

GR 1810 for SPECTRAL MM



GR 1943 for SPECTRAL PG 52  
SPECTRAL MM 102

T-Slotted Table



GR 1816 for SPECTRAL MM  
SPECTRAL AG

Air cooling system



GR 1909 for SPECTRAL MM 102

Automatic height Calibration



GR 1826 for SPECTRAL MMax

SPECTRAL Floor Cabinet



GR 1907 for SPECTRAL MM 102  
SPECTRAL AG 102  
SPECTRAL PG 52

Recirculating coolant Tank



GR 1945 for SPECTRAL PG 52  
SPECTRAL AG 102  
SPECTRAL MM 102

Automatic Sample Height Measurement System for full cyclic operation



GR 1922 for SPECTRAL AG 102  
GR 1911 for SPECTRAL MM 102

Pneumatic Clamping Device with 3-Jaws



GR 1913 for SPECTRAL MM 102



**SPECTRAL 250**

80 00

**SPECTRAL 250**

Table-top Surface Grinder for spectroscopic sample preparation of steels and irons, vibration-free construction, robust steel housing, strong 1.1 kW motor, working disc of 250 mm dia., with rotation speed of 2800 rpm, a rapid stop of the turning disc, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), disc covered halfway by lid allowing grinding only on a segment, spark trap, dust box and standard outlet for exhauster, easy to clean and ready for operation. 230 V, 1-phase, 50 Hz.



**SPECTRAL 350-1**

80 02-1

**SPECTRAL 350-1**

Single Disc Surface Grinder for spectroscopic sample preparation of steels and irons, single disc of 350 mm dia., dynamically balanced, with 2.2 kW driving motor, with rotation speed of 2800 rpm, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), discs covered halfway by lids allowing grinding only on a segment, dedusting system with spark trap and easily replaceable filters, with interlocking safety switch not allowing the top cover being opened before the motors are stopped, ergonomically designed and ready for operation. (wooden packing included) 400V, 3-phase, 50 Hz.



**SPECTRAL 350-2**

80 02

**SPECTRAL 350-2**

Dual Disc Surface Grinder for spectroscopic sample preparation of steels and irons, course and fine grinding possible on two separate independent discs of 350 mm dia. which are dynamically balanced, two individual driving motors(2.2 kW each) with 2800 rpm, suction created by special design retaining the abrasive paper on the disk(no need to glue or fix), discs covered halfway by lids allowing grinding only on a segment, dedusting system with spark trap and easily replaceable filters, with interlocking safety switch not allowing the top cover being opened before the motors are stopped, ergonomically designed and ready for operation. (wooden packing included) 400V, 3-phase, 50 Hz.



**SPECTRAL 350-2S**

80 02-2S

**SPECTRAL 350-2S**

Dual Disc Surface Grinder as above, but with two speeds 1400/2800 rpm.

**Sample Holders for SPECTRAL 250/350**

GR 1804

Sample Holder for round specimens, Magnetic type.

GR 1805

Sample Holder for round specimens, Mechanical type.

**Spare Part Kit for SPECTRAL 350**

GR 1850

Recommended Set of Spare Parts, SPC 350

## SPECTROSCOPY



### SPECTRAL PG 52

81 03

#### SPECTRAL PG 52

Swing Grinding Machine for fast spectroscopic sample preparation of iron and steel samples, bench top compact design, closed housing, max. safety provided with interlocking switch, robust column mounted in taper roller bearings, low noise with motor of 3 kW and 2800 rpm, with electronic brake system and overload protection, extraordinary access with sliding door, easy handling with sample swing movement from the front side of the machine, vertical precision positioning of the grinding head with an accuracy of 0.01 mm, large working space with LED lamp, standard outlet for dust exhauster, sample cooling available with water cooling and/or compressed air, complete and ready for operation. Standard packing included.  
Without clamping devices.  
Without cooling tank.  
400V, 3-phase, 50 Hz.

### Accessories for SPECTRAL PG 52

GR 1943	Mechanical 3-jaw chuck
GR 1801	Mechanical clamping device for samples up to 60 mm.
GR 1948	Universal Jaws for Mechanical Clamping Device (GR 1801)
GR 1949	Jaws for Thin Specimens for Mechanical Clamping Device (GR 1801)
GR 1942	Permanent Magnetic Clamping Device, 100x150 mm.
GR 1929	Electromagnetic clamping plate
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1945	Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc.
YM 8813	Fine filter sheets for recirculation cooling tank (GR 1945), 10 pcs
GR 1540	Magnetic collector rod for recirculation cooling tank

### Spare Part Kit for SPECTRAL PG 52

GR 1944	Recommended Set of Spare Parts, SPC PG 52
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### Installation, Operator Training & Limited Service Training for Spectral MMax/MM 102/AG 102

HIZ 014	"Installation, Operator Training and Limited Service Training" at customer site by Metkon Service Engineer for products Spectral Mmax / MM 102 / AG 102. (Travel and living expenses are to be charged at actual cost additionally)
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## SPECTRAL AG 102

81 05	<p><b>SPECTRAL AG 102</b> Automatic Grinding Machine for fast spectroscopic sample preparation of iron and steel samples, bench top compact design, Programmable with colored 7" HMI touch screen control, with Siemens PLC control unit, accurate and motorized positioning in Y and Z axis, closed housing, max. safety provided with interlocking switch, large working space with LED lighting, extraordinary access for easy handling with sliding door, automatic sample feeding with adjustable fine speed, controlled material removal from the specimen with accuracy of 0.01 mm grinding depth, high torque 3 kW grinding motor, with electronic brake system and overload protection, with 2800 rpm speed to obtain optimum surfaces on different materials, all parameters on colored LCD display, sample cooling available with water cooling and/or compressed air, ready for operation. Without clamping devices. Without cooling tank. 400V, 3-phase, 50Hz.</p>
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## Accessories for SPECTRAL AG 102

GR 1819	Pneumatic Clamping Device with 3-Jaws (To be ordered simultaneously together with the machine order)
GR 1929	Electromagnetic clamping plate (To be ordered simultaneously together with the machine order)
GR 1922	Automatic Sample Height Measurement System for full cyclic operation, with automatic dressing of cup grinding stone. (To be ordered simultaneously together with the machine order)
GR 1842	Automation Software for full cyclic operation. (To be ordered simultaneously together with GR 1828)
GR 1816	T-slotted table
GR 1945	Recirculating coolant tank, stainless steel, 55 lt. capacity, with pump, hoses etc.
YM 8813	Fine filter sheets for recirculation cooling tank (GR 1945), 10 pcs
GR 1540	Magnetic collector rod for recirculation cooling tank
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102

## Spare Part Kit for SPECTRAL AG 102

GR 1927	Recommended Set of Spare Parts, SPC AG 102
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## SPECTRAL MM 102

81 04	<p><b>SPECTRAL MM 102</b> Automatic fine surface milling machine for preparation of non-ferrous metal samples for OES and XRF analysis, bench top compact design, Siemens PLC control unit, Programmable with colored 7" HMI touch screen control, closed housing, max. safety provided with interlocking switch, large working space with LED lighting, chip container, extraordinary access for easy handling with sliding door, for samples up to 70 mm dia. automatic sample feeding with adjustable fine speed control, controlled material removal from the specimen with accuracy of 0.01 mm, cutting motor 3 kW, with electronic brake system and overload protection, with variable rotational motor speed 500-4000 rpm to obtain optimum surfaces for different materials, ready for operation. Without milling head. Without clamping devices. Without cooling system. 400 V, 3-phase, 50 Hz.</p>
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## Accessories for SPECTRAL MM 102

GR 1835	Milling head 63 mm for 5 cutting tips, SPC MM 102
GR 1836	Milling head 80 mm for 6 cutting tips, SPC MM 102
GR 1810	Manual measuring tool for cutter positioning
GR 1911	Automatic Sample Height Measurement System for full cyclic operation. [To be ordered simultaneously together with the machine order]
GR 1841	Automation Software for full cyclic operation. [To be ordered simultaneously together with GR 1840]
GR 1801	Mechanical clamping device for samples up to 60 mm.
GR 1948	Universal Jaws for Mechanical Clamping Device [GR 1801]
GR 1949	Jaws for Thin Specimens for Mechanical Clamping Device [GR 1801]
GR 1943	Mechanical 3-jaw chuck
GR 1913	Pneumatic Clamping Device [To be ordered simultaneously together with the machine order]
GR 1946	Universal Jaws for Pneumatic Clamping Device [GR 1913]
GR 1947	Jaws for Thin Specimens for Pneumatic Clamping Device [GR 1913]
GR 1816	T-slotted table
GR 1909	Air cooling system for Spectral MM 102 [To be ordered simultaneously together with the machine order]
GR 1907	Floor Cabinet for SPECTRAL PG 52 and SPECTRAL AG/MM 102
GR 1908	Mobile Chip Container for SPECTRAL MM 102 [Only used with GR 1907 Floor Cabinet]

## Spare Part Kit for SPECTRAL MM

GR 1928	Recommended Set of Spare Parts, SPC MM 102
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## SPECTRAL MMæx

80 06	<p><b>SPECTRAL MMæx</b> Fully Automatic fine surface milling machine for preparation of steels, cast iron and non-ferrous metal samples for OES and XRF analysis, Programmable with colored 10" HMI touch screen control, Siemens PLC control unit, closed housing, max. safety provided with interlocking switch, large working space with LED lighting, chip container, special clamping device suitable for all shapes of sample forms, [cylindrical, round, oval, etc.], for samples up to 60 mm dia., with max. 65 HRC, integrated air cooling system, automatic height positioning of the milling head for operation, automatic sample feeding with adjustable fine speed control, digital depth setting, digital setting of milling height with accuracy of 0.01 mm., milling motor 5.5 kW, digital setting of head rotational speed to obtain optimum surfaces for different materials, ready for operation. Without milling head. 400 V, 3-phase, 50 Hz.</p>
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## Accessories for SPECTRAL MMæx

GR 1823	Milling Head for ferrous materials, 80 mm. for 7 cutting tips
GR 1824	Milling Head for ferrous materials, 100 mm. for 8 cutting tips
GR 1834	Milling Head for nonferrous materials, 100 mm. for 8 cutting tips
GR 1825	Milling Head with integrated deburring
GR 1826	Automatic height calibration after changing of milling head type for different materials

## Spare Part Kit for SPECTRAL MMæx

GR 1854	Recommended Set of Spare Parts, SPC MMæx
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**INNOVATIVE FLEXIBILITY DYNAMISM RESPONSIVE**

